

CLAIMS:

What is claimed is:

1. A DRAM cell comprising:
  - a semiconductor substrate;
  - a trench extending into the substrate;
  - a cell capacitor disposed in a bottom portion of the trench;
  - a cell transistor disposed in a top portion of the trench above the cell capacitor;
  - a node conducting element connecting the cell capacitor to the cell transistor; and
  - a collar disposed about the node conducting element between the cell transistor and the cell capacitor;wherein:
  - the collar is disposed in the substrate, at least partially outside of the trench, between the cell capacitor and the cell transistor.
2. A DRAM cell, according to claim 1, wherein:
  - the collar is disposed substantially outside of the trench.
3. A DRAM cell, according to claim 1, wherein:
  - the collar is disposed wholly outside of the trench
4. A DRAM cell, according to claim 1, further comprising:
  - a strap disposed between the node conducting element and the cell transistor.
5. A DRAM cell, according to claim 1, further comprising:

a strap which is self-aligned with the collar.

6. A DRAM cell, according to claim 1, further comprising:  
a strap disposed in the trench at substantially a same depth as the collar.
7. A DRAM cell, according to claim 1, further comprising:  
a strap disposed in the trench and laterally surrounded by the collar.
8. A DRAM cell, according to claim 1, further comprising:  
a strap disposed in the trench and having a periphery; and  
the collar is laterally adjacent and surrounds the periphery of the buried strap.
9. A DRAM cell comprising:  
a semiconductor substrate;  
a trench extending into the substrate;  
a cell capacitor disposed in a bottom portion of the trench;  
a cell transistor disposed in a top portion of the trench above the cell capacitor;  
a node conducting element connecting the cell capacitor to the cell transistor; and  
a collar disposed about the node conducting element between the cell transistor and the cell capacitor; and  
a strap;  
wherein:  
the strap is embedded into a top surface of the collar.

10. A DRAM cell, according to claim 9, wherein:  
the strap extends no higher than the collar.
11. A DRAM cell, according to claim 9, wherein:  
the strap is has a periphery which is laterally surrounded by the collar.
12. A method of forming DRAM cells, comprising:  
forming trenches in a semiconductor substrate;  
forming cell capacitors in a bottom portion of the trench;  
forming cell transistors in a top portion of the trench; and  
for each DRAM cell, providing a collar between the cell capacitor and the cell transistor,  
the collar being disposed in the substrate, at least partially outside of the trench.
13. A method, according to claim 12, wherein:  
the collar is disposed substantially outside of the trench.
14. A method, according to claim 12, wherein:  
the collar is disposed wholly outside of the trench
15. A method, according to claim 12, further comprising:  
for each DRAM cell, providing a node conducting element between the cell capacitor and  
the cell transistor;  
wherein:  
the collar is disposed laterally adjacent the node poly element.

16. A method, according to claim 12, further comprising:  
for each DRAM cell, providing a node conducting element between the cell capacitor and the cell transistor;  
wherein:  
the collar surrounds a periphery of the node poly element.
17. A method, according to claim 12, further comprising:  
for each DRAM cell, providing a node conducting element between the cell capacitor and the cell transistor; and  
a strap disposed between the node conducting element and the cell transistor.
18. A method, according to claim 12, further comprising:  
for each DRAM cell, providing a strap which is self-aligned with the collar.
19. A method, according to claim 12, further comprising:  
for each DRAM cell, disposing a strap in the trench at substantially a same depth as the collar.
20. A method, according to claim 12, further comprising:  
for each DRAM cell, disposing a strap in the trench; and  
the strap is laterally surrounded by the collar.